REMARKS

Reconsideration of the present application is respectfully requested.

In the second Office Action the Examiner rejected claims 1-4, 25-35, 37, 38, 40, 41 and 82 under 35 U.S.C. §102(b) as anticipated by Katsurabayashi or, in the alternative, under 35 U.S.C. §103(a) as obvious over Katsurabayashi, and rejected claims 5-18, 20, 21, 42-52, 54, 55, 57-63, 65, 66, 75-81 and 83-89 under 35 U.S.C. §103(a) as obvious over Katsurabayashi in view of Mattaway. The Examiner also rejected claims 76-81 under 35 U.S.C. §112 for improper claim form.

The Examiner withdrew the rejection of claims 5 and 25 on grounds of alleged double patenting, and allowed claims 19, 22-24, 36, 39, 53, 56, 64 and 67-74.

Claims 5, 69, 71, 74-81 and 84 are hereby amended, as discussed below, and new claims 90-94 are hereby added to the application. Claims 1-4, 25-67, 73, 82, 83 and 86-89 are hereby cancelled without prejudice to Applicants' right to resubmit those claims in a continuation application.

Claim Rejections – 35 U.S.C. §112

Claims 76-81

Dependent claims 76-81 are hereby amended to read as method claims, consistent with base claim 75, and are therefore believed to comply with 35 U.S.C. §112.

Claim Rejections – 35 U.S.C. §103(a)

Claim 5

Claim 5 is directed toward a network employing client/server architecture for knowledge transfer in a group setting. Claim 5 as originally filed was rejected over Katsurabayashi alone, under 35 U.S.C. §102(b) as anticipated or, in the alternative, under 35 U.S.C. §103(a) as obvious.

As amended after first Action, claim 5 stands rejected as obvious over Katsurabayashi in view of Mattaway.

The Examiner acknowledged that Katsurabayashi does not expressly teach a server comprising a database as claimed with each workstation being programmed to send data structures to the database on the at least one server, but cited Mattaway as teaching the missing claim elements. Specifically, the Examiner stated that "Mattaway teaches a collaboration system that allows users to store information in a public and private workspace along with a moderator work area where the purpose of the application is to let peer to peer applications that communicate primarily on a dedicated network to communicate in a networked environment complete with servers and databases in a packet based environment." The Examiner asserted that it would have been obvious "to apply the teachings of Mattaway to Katsurabayashi for the purposes of modifying the system of Katsurabayashi to incorporate the packet based network to allow communications with a server on a database."

According to the Examiner, Mattaway expressly suggests enabling a peer-to-peer system to communicate in a network packet based infrastructure. Whether or not that's true, it's not the same as suggesting client/server architecture. Packet-based (or packet-switched) networks are so called because they use data packets for communications, and they include peer-to-peer (or P2P) networks. Thus, a packet-based network is not inherently a client/server network. In the passage from Mattaway cited by the Examiner (col. 5, lines 60-64), Mattaway merely discloses that the network infrastructure, which is packet-based, enables P2P collaboration.

As will be explained, while Mattaway uses the words "server" and "client," it does not teach a client/server architecture as that term is understood by those skilled in the art. Therefore, it is respectfully submitted that Katsurabayashi and Mattaway, even when combined, do not teach or suggest all the claim limitations as required to support a *prima facie* case of obviousness. MPEP §2143.

Before implementing the client/server network of claim 5, Applicants used a peer-to-peer network for interactive classroom instruction but encountered unexpected performance degradation as larger-scale testing progressed and the number of concurrent participants grew, as described in response to the first Office Action. Some students received data from the teacher later than nearby students, the teacher observed increasingly sluggish operation of his

workstation as more students joined the electronic class session, and students reported a lag in receiving objects from the teacher especially when a late-arriving student joined the session.

Investigation led Applicants to understand that these three problems were related. As the number of students grew, the processor on the teacher workstation was spending an increasing percentage of its time iterating through the list of students as it transferred objects to each student in sequence. This made the processor unavailable to handle other processing requests from the teacher such as updating the display in response to mouse or pen movements and the like. Similarly, the time differential between when the first student received a data object and when the final student received that same object increased as the number of students grew. Similarly, when a student joined the electronic session late, the teacher workstation had to send that student the backlog of objects that the student had missed. It was not unusual for this backlog to include hundreds or even thousands of objects. Because the teacher workstation was busy sending this backlog of objects, it would respond sluggishly to actions from the teacher and would also lose its capacity to quickly send new objects to the other students in the class.

It was particularly surprising that the problems described in the two previous paragraphs begin to manifest themselves with as few as twenty or thirty student users. Applicants later realized that this was partially due to the fact that the teacher workstation had to transfer complex objects including graphical objects. The problems were exacerbated by the fact that the teacher workstation generally employed a standard desktop or laptop computer. For reasons of economy, such computers typically have fairly limited power in terms of, for example, processing speed and internal memory, and this was especially so with the computers that were cost-effective and otherwise practical for use in an electronic classroom at the time the present invention was made. The client/server architecture in the invention of claim 5 has allowed a substantial improvement in performance with the continued use of relatively inexpensive client computers for both the moderator and participant workstations.

Mattaway takes a different approach, using "multicast" technology to send multiple copies of a data packet simultaneously and thereby reduce the load on a moderator workstation. It is a hardware approach employing commercially available multicast cards 216 (col. 4, lines 20-22) to replicate data packets from the moderator, and the replicated data are "reflected" to other participants in a conference (col. 4, lines 40-41). By moving the data transmission load to hardware, the system is more able to handle the load.

But this approach also has problems and limitations. A large (e.g., T3) bandwidth is required to support many users in a multicast environment. (Col. 4, lines 23-24). The large bandwidth is necessary to handle the heavy data transmission loads inherent in "multicast" environments where data packets are transmitted concurrently. For example, a simultaneous transmission of data packets to 10 recipients requires 10 dedicated connections between the source and the recipients. These dedicated connections require sufficient bandwidth to support the simultaneous transmission to the 10 recipients. The required bandwidth is directly proportional to the number of recipients, so doubling the number of recipients to 20, for example, creates a requirement for twice the bandwidth in order to support the doubled throughput. And because this approach involves specialized (multicast) cards, the hardware costs increase depending on the number of participants in the system.

Mattaway employs point-to-point connectivity, or what is often referred to as peer-to-peer (or P2P) architecture, as opposed to client/server architecture as in the invention of claim 5. While definitions of peer-to-peer and client-server computing may vary in nuance, people skilled in the art generally agree on the fundamental characteristics of these architectures. A peer-to-peer computer network relies primarily on the computing power and bandwidth of the participants in the network rather than concentrating it in a relatively low number of servers.[1] P2P networks are typically used for connecting nodes via largely ad hoc connections. Such networks are useful for many purposes. Sharing content files containing audio, video, data or anything in digital format is very common, and real-time data, such as telephony traffic, is also passed using P2P technology. A pure peer-to-peer network does not have the notion of clients or servers, but only equal peer nodes that simultaneously function as both "clients" and "servers" to the other nodes on the network.

A client-server is a network architecture which separates the client (often a graphical user interface) from the server.[2] Each instance of the client software can send requests to a server. There are many different types of servers, such as file servers, terminal servers, and mail servers. While their purpose varies somewhat, the basic architecture remains the same. Although this idea is applied in a variety of ways, the easiest example to visualize is the current use of web pages on the Internet. When one visits a website, his computer and web browser (graphical user

[1] See, e.g., Wikipedia, http://en.wikipedia.org/wiki/Peer-to-peer.
[2] See, e.g., http://en.wikipedia.org/wiki/Client-server.

interface) may be considered a client, and the computers, databases, and applications that make up the website may be considered the server. When the web browser requests a particular article from the website, the website server finds all of the information required to display the article in the website database, assembles it into a web page, and sends it back to the web browser.

In a sense, as noted above, the nodes of a peer-to-peer (P2P) network function as both "clients" and "servers" to the other nodes on the network. When one computer in the network, say node A, accesses another computer, say node B, to obtain information, node A may be thought of as a client requesting information and node B may be thought of as a server which sends the requested information to (or "serves") node A. Thus, usage of the terms "client" and "server" may help describe how a P2P network works. However, it does not make the network a client/server network.

The peer-to-peer nature of the Mattaway system is apparent from various parts of the patent, such as in the description of the role of the global connection/information server 210. Mattaway teaches that any and all servers or clients in the collaborative multimedia system must register their IP addresses with the connection server. This server might conceptually be thought of as a "switch operator", or as a "virtual circuit switch" according to Mattaway (col. 7, lines 12-20), providing IP addresses as a directory look-up service upon request and thereby enabling parties to establish direct point-to-point communication links. (Col. 5, lines 38-49).

The virtual circuit switch of Mattaway is analogous to the circuit switch used in a traditional public switched telephone network for making a physical electrical connection between the telephones of a calling party and a party being called. In early telephone systems, the connection was made with operator assistance. In any case, the end result was a physical connection between subscribers' telephones for the duration of the call. The copper wire used for the connection could not be used to carry other calls at the same time, even if the subscribers were not talking and the line was silent. Similarly, the virtual circuit switch of Mattaway dynamically takes and releases channels (circuits) all on an as-needed basis. But once taken, the channel can only be used for the established connection between the two connected nodes until such time as it is released. Only after it's released does the channel become available for use by other nodes for another peer-to-peer (P2P) connection.

Regarding the statement in Mattaway (col. 5, lines 60-62) that the network infrastructure enables users to collaborate in peer-to-peer or moderated fashion, it is noted that podium client

240 is for moderated collaboration. That is, it is the client device used by a moderator (instructor or speaker) to control who has the floor, and Mattaway indicates that the podium client is similar to the notebook client except for the ability to direct who has the floor. Thus, the network on which both types of collaboration take place is a peer-to-peer network.

It is respectfully submitted that Mattaway uses the words "client" and "server" in the sense applicable to P2P networks and not in the sense associated with true client/server architecture, and that, when Mattaway is considered in its entirety, it does not fairly teach or suggest a client/server network.

It should also be pointed out, in particular, that Mattaway uses multicast cards to "reflect" data packets from the moderator to other participants in a conference (col. 4, lines 40-41), as briefly mentioned above. There is no indication of a database in the conference server which contains the multicast cards, and, in particular, no indication that data structures defining either moderator or participant images are or should be stored in a database on the server. The Examiner acknowledged in the Office Action that Katsurabayashi does not expressly teach a server comprising a database and wherein each workstation is programmed to send data structures to the database on the at least one server. Applicants respectfully point out that neither does Mattaway.

Mattaway in fact teaches away by citing the podium as a possible repository of recorded classes available for reference, e.g., to replay a missed class. (Col. 16, lines 62-63). This is comparable to Applicants' prior (peer-to-peer) system in which the moderator workstation stored the past class session data and had the burden of supplying past data to late-arriving students, resulting in a performance degradation affecting the entire class.

The client-server architecture as claimed allows the present invention a substantial improvement in performance with the continued use of relatively inexpensive client computers for both the moderator and participant workstations. Also, the client-server architecture provides the opportunity to move beyond the limitations of peer-to-peer systems and to extend the feature/functionality of the system.

Commercial success of the invention is another factor supporting patentability in this case. Dynamic Knowledge Transfer, LLC, an assignee of rights to the present invention, makes and sells client/server-based software (hereinafter "DyKnow software") which is the core of the client/server network as claimed in amended claim 5. The company reports that sales of the

DyKnow software, which was introduced in 2003, more than doubled in 2004 and 2005 and are projected, based on sales to date, to more than double again this year. Customers including colleges, high schools and elementary schools across the country use the product, and, in several cases, customers that were using peer-to-peer software switched to the DyKnow software due in large part to its client-server architecture.

This commercial success is directly derived from the invention claimed. Customers are free to choose on the basis of objective principles, and are choosing the DyKnow software due to its technical merit which customers can discern from a comparison of the DyKnow software with the available alternatives. P2P architecture requires larger bandwidths, especially for use with wireless technologies, e.g., wireless Tablet PCs, it has been found to be not as reliable, and it is not easily scalable. The commercial success is not due to heavy promotion or advertising or other purchasing decisions tied to the company.

It is respectively submitted that, at the time the present invention was made, the combination of features recited in claim 5 as amended would not have been obvious to one of ordinary skill in the art in view of Katsurabayashi and Mattaway, or in view of the prior art as a whole.

Claim 75

Claim 75, rejected under 35 U.S.C. §103(a) as obvious over Katsurabayashi in view of Mattaway, covers a method of facilitating knowledge transfer in a group setting using client/server architecture with moderator and participant workstations as defined in the claim.

According to the claimed method, a moderator sends data structures from his workstation to a database on a server and therefrom to the participant workstations for display on the participant display devices, and participants send data structures from their workstations to the database on the server and therefrom to the moderator workstation. It is respectfully submitted that Katsurabayashi does not teach these limitations, and that the Examiner is correct in observing that Katsurabayashi does not expressly teach a server comprising a database.

Katsurabayashi does not mention the word "server," does not show a server, and does not in any way suggest the desirability of client/server architecture to one of ordinary skill in the art. Katsurabayashi teaches a peer-to-peer network. Note in this regard that FIG. 2 shows a simple

line 1 interconnecting "[p]lural personal computers, e.g., four personal computers 2A, 2B, 2C and 2D,"[3] as is conventional for depiction of a peer-to-peer network. The shared data memory 14, individual data memory 15, and data manager 16 described in column 9 are all in every PC, as can be appreciated from FIG. 1 and the description thereof.

It is respectfully submitted that Mattaway does not supply the missing teachings, as it does not teach a client/server architecture as discussed above with respect to claim 5. Since claim 75 recites limitations not taught or suggested by either reference cited against it, it is respectfully submitted that the rejection fails to meet a basic requirement of a *prima facie* case of obviousness and thus should be withdrawn. MPEP §2143.

Claim 84

Claim 84 as amended is a method claim directed toward a new use of client/server architecture, namely, to facilitate multiple synchronous class sessions in an interactive learning environment. While client/server architecture was known in general at the time the present invention was made, it is respectfully submitted that it was not obvious at the time – to one of ordinary skill in the art – either in view of Katsurabayashi and Mattaway, or the prior art as a whole, to use client/server architecture and a common server for different classes being taught at the same time.

New Claims

Claim 90

New claim 90 is respectfully submitted to be allowable for the reasons stated above with respect to claim 5, from which it depends, and also because of the added limitations of client devices including student workstations and an associated teacher workstation in each of a plurality of classrooms, with each workstation connected to the at least one server, whereby multiple classroom sessions may be conducted simultaneously via the server. It is respectfully submitted that the prior art, including Katsurabayashi and Mattaway, does not fairly teach or

[3] Col. 6, lines 2-3.

suggest such features in combination with a client/server network of computers programmed for knowledge transfer in a group setting as claimed in claim 5.

Claim 91

Claim 91 is respectfully submitted to be allowable for the reasons stated above with respect to claim 5, from which it depends, and also because it recites that the participant workstations include moderator functionality allowing the participants to add images to the moderator work area, whereby multiple users may concurrently serve as moderators making changes to the content of the moderator work area.

Mattaway teaches that one must have the floor to contribute to the whiteboard, i.e., that only the party in control may effect a change. (Col. 6, lines 28-34; see also col. 13, lines 40-50). Mattaway thus teaches away from the invention of claim 90, and misses the advantage of allowing multiple participants to have control of a whiteboard simultaneously. Generally we think of knowledge transfer in a meeting or class where one person instructs one or more recipients at any given time. However, the present invention contemplates emulating as much as possible the traditional blackboard experience, where multiple users can contribute concurrently, and if possible, at the same time add value from technology to be used in ways heretofore not thought of. Experience with the product has shown Applicants that allowing multiple participants to simultaneously change content on a whiteboard contributes to helping students learn.

It is respectively submitted that the invention of claim 91 is neither taught nor suggested by Katsurabayashi combined with Mattaway, or by the prior art as a whole.

Claim 92

Claim 92 includes the limitations of claim 5 and adds the limitation that each participant workstation is programmed to synchronize with an ongoing session by retrieving from the database all moderator images created during the session before the participant joined the session. This feature allows a late-arriving participant to catch up with other session participants

quickly, and the combination of this feature with the other claim features is believed to be neither taught nor suggested by the prior art.

Claims 93 and 94

Claims 93 and 94 are method claims which recite limitations similar to those of claims 91 and 92, respectively, but limited to an interactive learning environment with teachers and students. It is respectfully submitted that, especially in that context, each claim recites a new method that was not obvious in view of the prior art.

Miscellaneous Amendments

Miscellaneous amendments have also been made as matters of form or to correct minor errors as will be apparent to the Examiner from reading the amended claims.

Conclusion

In view of the foregoing remarks and amending changes, it is respectfully submitted that claims 5-24, 68-72, 74-81, 84, 85, and 90-94 now pending in the application are believed to be in condition for immediate allowance, and such action is respectfully requested. No new matter is introduced by this amendment.

The Examiner is invited to contact the undersigned attorney by telephone if a discussion of any issues concerning the application would help expedite the allowance of this application.

Respectfully submitted,

William F. Bahret, Reg. No. 31,087
Bahret & Associates
320 N. Meridian St., Suite 510
Indianapolis, Indiana 46204
(317) 423-2300